

Appln. No. 10/691,364
Docket No. GP-303400/GM2-0068

AMENDMENTS TO THE CLAIMS

This listing of claims will replace all prior versions and listings of claims in the application.

Listing of Claims:

1. (original) An intake valve for a combustion engine having an intake port, the intake valve comprising:

a valve guide having an end proximate the intake port;

a valve shield extending from the end of the valve guide and extending into the intake port; and

a valve stem arranged proximate the valve guide and valve shield;

wherein the valve guide and valve stem define a first clearance dimension therebetween;

wherein the valve shield and valve stem define a second clearance dimension therebetween; and

wherein the second clearance dimension is equal to or greater than the first clearance dimension.

2. (original) The intake valve of Claim 1, wherein:

the valve stem is movable relative to the valve guide and has a defined displacement with respect thereto; and

the valve shield has a length equal to or greater than the defined displacement.

3. (original) The intake valve of Claim 1, wherein:

the second clearance dimension is equal to or greater than about two times the first clearance dimension.

Appl. No. 10/691,364
Docket No. GP-303400/GM2-0068

4. (original) The intake valve of Claim 3, wherein:
the second clearance dimension is equal to or greater than about five times the first clearance dimension.

5. (original) The intake valve of Claim 1, wherein:
the valve stem includes a first outer surface disposed at the intake port;
the valve shield includes a second outer surface disposed at the intake port;
the second clearance dimension is sized such that the second outer surface has a lower operating temperature than the first outer surface.

6. (original) The intake valve of Claim 1, wherein:
the valve shield at least partially surrounds the valve stem such that the valve stem is shielded from direct exposure to a fuel containing high boiling fraction.

7. (original) A valve shield for a combustion engine having an intake port, a valve guide having an end proximate the intake port, and a valve stem movable relative to the valve guide and having a defined displacement with respect thereto, the valve shield comprising:

- a first end proximate the end of the valve guide;
- a second end at a defined distance from the first end;
- an outer surface disposed between the first and second ends and facing the intake port; and
- an inner surface disposed between the first and second ends and facing the valve stem;

wherein the defined distance is equal to or greater than the defined displacement.

8. (original) The valve shield of Claim 7, wherein the valve stem includes an outer surface disposed at the intake port, and further wherein:

Appl. No. 10/691,364
Docket No. GP-303400/GM2-0068

the outer surface of the valve shield is disposed at a distance from the outer surface of the valve stem such that the outer surface of the valve shield has a lower operating temperature than the outer surface of the valve stem.

9. (original) The valve shield of Claim 7, wherein:

the outer surface of the valve shield at least partially surrounds the valve stem such that the valve stem is shielded from direct exposure to a fuel containing high boiling fraction.

10. (original) The valve shield of Claim 8, wherein:

the inner and outer surfaces of the valve shield define a thickness t ;

the inner and outer surfaces of the valve guide define a thickness T ; and

thickness t is equal to or greater than about $1/8$ of thickness T and equal to or less than about $1/4$ of thickness T .

11. (original) A method for lessening the accumulation of high boiling fraction between a valve stem and a valve guide of a combustion engine, comprising:

operating the combustion engine by introducing an air-fuel mixture into an intake port for combustion in a combustion chamber and igniting the mixture therein; and

shielding a portion of the valve stem that extends beyond the valve guide from direct exposure to the air-fuel mixture;

wherein the shielded portion of the valve stem is exposed to less air-fuel mixture than if unshielded, thereby lessening the accumulation of high boiling fraction on the valve stem and between the valve stem and valve guide.

12. (original) The method of Claim 11, wherein the valve stem cyclically extends and retracts beyond the end of the valve guide a defined displacement, the defined displacement and diameter of the valve stem defining a surface area on the valve stem, and wherein the shielding further comprises:

Appln. No. 10/691,364
Docket No. GP-303400/GM2-0068

shielding at least a portion of the defined surface area for a length equal to or greater than the defined displacement.

13. (new) An intake valve for a combustion engine having an intake port, the intake valve comprising:

a valve guide having an end proximate the intake port;

a valve shield extending from the end of the valve guide and extending into the intake port; and

a valve stem arranged proximate the valve guide and valve shield, the valve shield being disposed to shadow the valve stem with respect to a fuel being directed to the intake port;

wherein the valve guide and valve stem define a first clearance dimension therebetween;

wherein the valve shield and valve stem define a second clearance dimension therebetween; and

wherein the second clearance dimension is greater than the first clearance dimension.

14. (new) A valve shield for a combustion engine having an intake port, a valve guide having an end proximate the intake port, and a valve stem movable relative to the valve guide and having a defined displacement with respect thereto, the valve shield comprising:

a first end proximate the end of the valve guide;

a second end at a defined distance from the first end;

an outer surface disposed between the first and second ends and facing the intake port; and

an inner surface disposed between the first and second ends and facing the valve stem;

Appln. No. 10/691,364
Docket No. GP-303400/GM2-0068

wherein the defined distance is equal to or greater than the defined displacement such that at an extended position at the defined displacement the valve stem is shadowed by the valve shield with respect to a fuel directed to the intake port.